REMARKS

Claims 1-16 (of which claims 1, 6, 10 and 13 are independent) are currently pending. In the Office Action mailed February 8, 2005, Figure 1 was objected to, claims 1-7, 10-14 and 16 were rejected under 35 U.S.C. § 103(a) and claims 8-9 and 15 were objected to as being dependent upon a rejected base claim but allowable if rewritten in independent form.

As set forth, Figure 1 has been amended as suggested by the examiner. An amended Figure 1 is attached to the present response.

I. Claim Objections

The present application describes a method for receiving multi-path signals. A rake receiver that contains multiple fingers is used to receive the multi-path signals. Each finger of the rake receiver includes a variable delay element. The delay of the variable delay element may be determined by scanning through a range of delays of the variable delay element and measuring an output signal level of the finger, and the variable delay element can then be set to a delay corresponding to the highest measured output signal level. (Abstract).

Claims 8-9 and 15 recite methods for implementing a delay within a multi-path signal. In particular, claim 8 recites "varying the first delay control signal over a first predetermined range of values," "measuring a signal power level of the first correlated data signal to determine a value of the first delay control signal corresponding to a highest measured signal power level of the first correlated data signal," and "setting the first delay control signal to the value of the first delay control signal corresponding to the highest measured signal power level of the first correlated data signal for operation." Claim 15 recites similar language.

Claims 8 and 15 were objected to as being dependent upon a rejected base claim, but allowable if rewritten in independent form including all of the limitations of the base claim and

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any intervening claims. Applicant has amended claim 13 to include the subject matter of claim 15. Further Applicant has amended claims 1, 6 and 10 to include content similar to that within original claim 15. As a result, Applicant contends that all pending claims 1-17 contain allowable subject matter.

Further, Applicant has amended claims 14-16 and for consistency with amendments in the independent claims, and claim 17 has been added.

II. 35 U.S.C. § 103(a) Claim Rejections

Claims 1-7, 10-14 and 16 were rejected under 35 U.S.C. § 103(a) as being anticipated by Gilhousen, U.S. Patent Number 5,280,472 in view of Komara, U.S. Patent Number 6,088,570 and further in view of Sourour, U.S. Patent Number 6,560,273.

To establish a *prima facie* case of obviousness under § 103 the cited references must teach or suggest all the claim limitations. (MPEP § 2142). Claims 1, 6, 10 and 13 are independent claims, from which the rejected claims 2-5, 7, 11-12, 14 and 16 depend. Applicant submits that neither Gilhousen, Komara, nor Sourour, separately or in combination, teach or suggest all claim limitations of claims 1, 6, 10 and 13.

Claims 1, 10 and 13

Applicant has amended claim 13 to include the subject matter of allowable claim 15. Further Applicant has amended claims 1 and 10 to include content similar to that within original claim 15. As a result, Applicant contends that claims 1, 10 and 13 are allowable.

In addition, Applicant submits that neither Gilhousen, Komara, nor Sourour, separately or in combination, teach or suggest "implementing a varying delay on the signal corresponding to the amount of time for the signal to travel to the receiver, the delay varying over a first predetermined range of values," "measuring a signal power level of the signal," and "resetting

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the delay to a value corresponding to the highest measured signal power level of the signal for further operation of the receiver," as in claim 1, "measuring an output power level of the first finger of the rake receiver to identify a high output power level of the first finger," and "setting a delay of the first variable delay to correspond to the high output power level of the first finger," as in claim 13, or a system for transmitting multi-path signals to a rake receiver including "a plurality of antennae ... configured to transmit a multi-path signal," and "wherein the multi-path signal received by the rake receiver is delayed to maximize an input power of the multi-path signal at the rake receiver," as in claim 10.

Gilhousen teaches a multiple antenna system provided with delay lines in the feeders such that each antenna is driven by a signal one or more microseconds delayed from its neighbors. Then, a multiple receiver architecture including subscriber mobile stations will allow the signal from each antenna to be received separately and to be coherently combined in such a way that cancellation will not occur. (Col. 12, lines 9-16). Gilhousen describes that the mobile units contain one or more CDMA receivers and a searcher receiver. The searcher scans the time domain determining what paths exist and which paths are the strongest. Available CDMA receivers are then assigned to the strongest available paths. Cell-site receivers contain a similar capability. (Col. 12, lines 28-34).

Gilhousen further explains that searcher receiver measures the strength of any reception of a desired waveform and compares the signal strength in the received signals to provide a signal strength signal to a control processor indicative of the strongest signals, which in turn provides control signals to data receivers for each to process a different one of the strongest signals. (Col. 25, lines 12-22). The control processor may also control signal transmission power levels using the signal strength signal. (Col. 26, lines 24-27).

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Gilhousen is concerned with adjusting signal *transmission* power levels based on a quality of a received signal. Gilhousen does not teach "implementing a varying delay on the signal corresponding to the amount of time for the signal to travel to the receiver," "measuring a signal power level of the signal," and "resetting the delay to a value corresponding to the highest measured signal power level of the signal for further operation of the receiver," as in claim 1 or similarly in claims 10 and 13.

Komara teaches a TDMA system that uses spatially diverse antennas for receiving uplink signals and the system selects the strongest signal to mitigate fading. In-band translators are located in cells and include delay elements to implement diversity. (Abstract). The translators measure the power of received signals, which are in turn fed to a diversity select and automatic level control (ALC) computer. The ALC computer compares an instantaneous power level of the two signals fed to it by translators and selects the diversity signal with the higher power level to control operation of a switch so as to transmit the higher energy diversity signal to ALC amplifier. (Col. 7, lines 35-44).

Komara does not teach "implementing a varying delay on the signal corresponding to the amount of time for the signal to travel to the receiver," "measuring a signal power level of the signal," and "resetting the delay to a value corresponding to the highest measured signal power level of the signal for further operation of the receiver," as in claim 1 or similarly in claims 10 and 13. Like Gilhousen, Komara is concerned with adjusting signal transmission power levels based on a quality of a received signal. Komara does not teach or suggest implementing a delay on received signals as in the present claims.

Lastly, Sourour teaches a rake receiver for operating in a multipath fading channel. Each rake finger in the receiver utilizes a select assigned delay to synchronize to a delay of one channel

path. The receiver includes a searcher that periodically performs a channel search on the received signal to detect new delays of strongest paths in the channel. Plural trackers, one for each channel path, adjust the select assigned delays between searches performed by the searcher. A delay controller compares new delays of the strongest paths from the searcher to the select assigned delays and reassigns one of the select assigned delays with one of the new delays only if the new delay differs from the one select assigned delay more than a predetermined threshold. (Col. 2, lines 10-28).

Sourour does not teach "implementing a varying delay on the signal corresponding to the amount of time for the signal to travel to the receiver," "measuring a signal power level of the signal," and "resetting the delay to a value corresponding to the highest measured signal power level of the signal for further operation of the receiver," as in claim 1 or similarly in claims 10 and 13. In contrast, Sourour teaches reassigning delays in order to synchronize reception of signals over multiple channels.

Since neither Gilhousen, Komara nor Sourour, separately or in combination, teach or suggest all claim limitations of claims 1 and 13, the combination of Gilhousen, Komara and Sourour does not render claims 1-5, 10-14 and 16 obvious.

Claim 6

Applicant has amended claim 6 to include content similar to that within original claim 15. As a result, Applicant contends that claim 6 is allowable. In addition, Applicant submits that neither Gilhousen, Komara, nor Sourour, separately or in combination, teach or suggest a rake receiver including "a first rake finger circuit having a first variable delay element," "a second rake finger circuit having a second variable delay element," and "wherein the first delay and the

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second delay are selected so that the first correlated data signal and the second correlated data signal arrive at the summing circuit at substantially the same time," as in claim 6.

Gilhousen teaches that within the transceivers of its system, outputs of circuitry are provided to a summer where they are summed with the output of transmit modulator/transmit power control circuits of other channel units. The output of summer is provided to the transmitter portion of transceiver, which comprises transmit power amplifier circuitry. The transmit power amplifier circuitry amplifies the signal for output via diplexer to antenna for radiating to the mobile units within the microcell service area. (Col. 18, lines 51-65).

Gilhousen only describes a rake receiver in passing (i.e., at Col. 11, lines 42-45), and also only generally describes any type of receiver. Applicant contends that Gilhousen does not teach or suggest a rake receiver "wherein the first delay and the second delay are selected so that the first correlated data signal and the second correlated data signal arrive at the summing circuit at substantially the same time," as in claim 6. Delays implemented within Gilhousen are chosen for other reasons, particularly, to adjust signal transmission power levels.

Komara does not teach a rake receiver. As discussed above, Komara teaches a receiver that compares power levels of signals to select a diversity signal with the higher power level to transmit the higher energy diversity signal. (Col. 7, lines 35-44). Komara does not teach or suggest a rake receiver "wherein the first delay and the second delay are selected so that the first correlated data signal and the second correlated data signal arrive at the summing circuit at substantially the same time," as in claim 6.

Sourour teaches a conventional rake receiver including rake fingers that receive and demodulate signal components from a number of channel paths. The outputs of the rake fingers are then combined to develop an output signal representing the original transmitted signal. Each

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finger synchronizes to a delay of the path, and delays of strongest paths in the channel are detected by the delay searcher. (Col. 3, lines 53-66). The delay searcher makes a periodic search over a wide range of channel delays, and after completing a new search, the delays used by the rake receiver may be updated if stronger channel paths appear. (Col. 4, lines 24-36).

Sourour does not teach or suggest a rake receiver "wherein the first delay and the second delay are selected so that the first correlated data signal and the second correlated data signal arrive at the summing circuit at substantially the same time," as in claim 6. Sourour is concerned with synchronizing delays of channel paths, rather than maximizing a received input power level of signals.

Since neither Gilhousen, Komara nor Sourour, separately or in combination, teach or suggest all claim limitations of claim 6, the combination of Gilhousen, Komara and Sourour does not render claims 6-7 obvious.

III. Summary

Applicant respectively submits that, in view of the remarks above, all of the pending claims 1-17 are in condition for allowance, and such action is respectively requested. The Examiner is invited to call the undersigned at (312) 913-0001 with any questions or comments.

Respectfully submitted,

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AMENDMENTS TO THE DRAWINGS

Figure 1 has been amended to include a legend indicating Prior Art.

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